

## Equilibrium in a Monopolistic Market

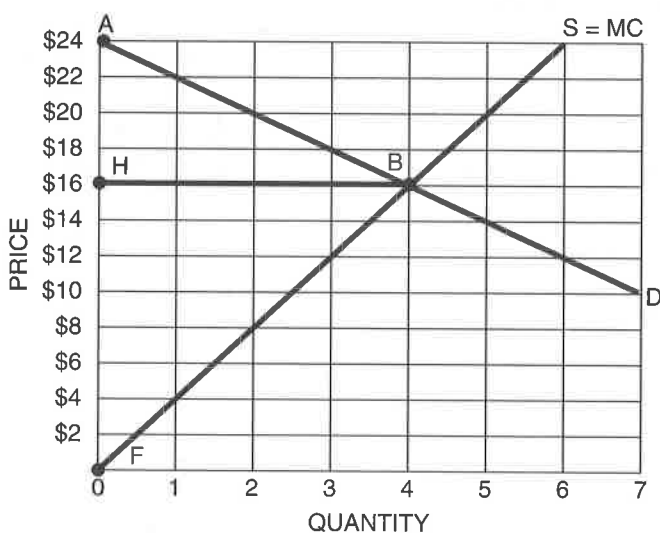
### Part A: Equilibrium in a Perfectly Competitive Market

Consider Figure 3-12.1, which shows a perfectly competitive market. The market supply curve  $S$  is the horizontal summation of the marginal cost (MC) curves of all the firms in the market. Use Figure 3-12.1 to answer the questions that follow the graph.



Figure 3-12.1

### Equilibrium in a Perfectly Competitive Market



1. What is the equilibrium quantity in the market?  
**4 units**
2. What is the equilibrium price?  
**\$16**
3. What area of the graph represents consumer surplus in the market? Calculate the dollar value of consumer surplus.  
**CS is represented by area ABH.  $CS = (0.5)(4)(\$24 - \$16) = \$16$ .**

4. What area of the graph represents producer surplus in the market? Calculate the dollar value of producer surplus.

*PS is represented by area BHF.  $PS = (0.5)(4)(\$16 - \$0) = \$32$ .*

5. What area of the graph represents total surplus (also called social welfare or total welfare)? Calculate the dollar value of total surplus.

*TS is represented by area ABF.  $TS = CS + PS = \$48$ .*

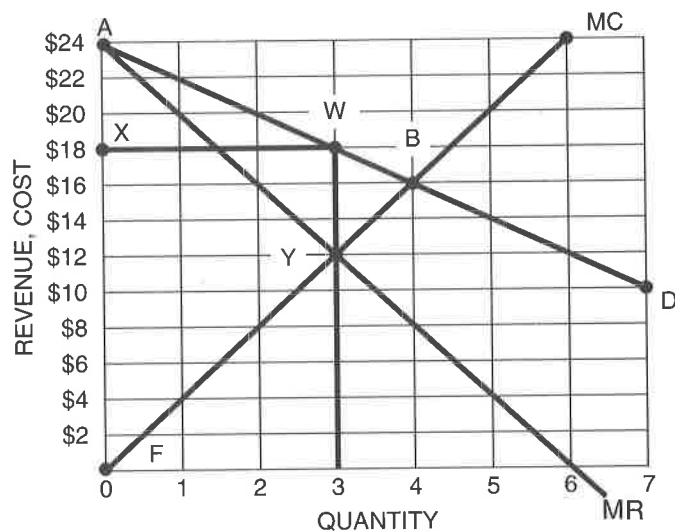
### Part B: Equilibrium in a Monopolistic Market

Now consider the same demand and cost curves, but assume the market is a monopoly. Because the monopoly faces the downward sloping market demand curve, it must reduce its price to sell more output, which means price will be greater than marginal revenue (MR). We add the firm's MR curve below its demand curve in Figure 3-12.2, as well as the monopolist's MC curve. Use Figure 3-12.2 to answer the questions that follow the graph.



Figure 3-12.2

#### Equilibrium in a Monopolistic Market



6. What output level will the monopolist produce? Why?

*It will produce 3 units where  $MR = MC$ .*

7. What price will the monopolist charge for this output? Why?

*The monopolist will charge a price of \$18 because, based on the demand curve, that is the highest price consumers will pay for 3 units.*

8. What area of the graph represents consumer surplus in the market? Calculate the dollar value of consumer surplus.

*CS is represented by area AWX.  $CS = (0.5)(3)(\$24 - \$18) = \$9$ .*

9. What area of the graph represents producer surplus? Calculate the dollar value of producer surplus.

*PS is represented by area FXWY. To calculate the value of PS, break the FXWY area into a triangle and a rectangle.*

$$PS = (0.5)(3)(\$12 - \$0) + (3)(\$18 - \$12) = \$18 + \$18 = \$36.$$

10. What area of the graph represents total surplus? Calculate the dollar value of total surplus.

*TS is represented by area AWYF.  $TS = CS + PS = \$45$ .*

*correction*

### Part C: Comparing Equilibrium in the Two Markets

11. How do the price and output of a monopolist differ from those in the perfectly competitive market?

*The monopolist has a higher price and a lower output than a perfectly competitive market.*

12. What is the dollar value of the portion of consumer surplus in the competitive market that is transferred to the firm's producer surplus in the monopoly situation?

*Note that CS drops from \$16 in perfect competition to \$9 in monopoly. What happens to the \$7 reduction in CS when the market becomes a monopoly?*

*(1) Some of it is captured by the monopoly as  $PS = (3)(\$18 - \$16) = \$6$ .*

*(2) The other part is lost because output was reduced by one unit because of the monopoly. This is called a deadweight loss (DWL) to society. In this example, the DWL in terms of CS is equal to \$1:  $(0.5)(4 - 3)(\$18 - \$16) = \$1$ .*

13. How does a monopoly affect consumer surplus? Is this good or bad from the perspective of consumers?

*Consumer surplus is reduced when a perfectly competitive market becomes a monopoly. This is bad news for consumers.*

14. What area of Figure 3-12.2 represents the deadweight loss resulting from the market being a monopoly? Calculate the dollar value of the deadweight loss.

*Deadweight loss results from the market output being reduced by 1 unit (from 4 units to 3 units) when the market changes from perfect competition to monopoly. The DWL is represented by the area BWY.*

$$DWL = (0.50)(1)(\$18 - \$16) + (0.5)(1)(\$16 - \$12) = \$1 + \$2 = \$3.$$

*The value of DWL also can be found as the reduction in TS when a perfectly competitive market becomes a monopoly:  $\Delta TS = \$48 - \$45 = \$3$ .*